

## The rediscovery of *Leandrites stenopus* Holthuis, 1950 (Crustacea: Palaemoninae), from Lucinda, Queensland

A.J. BRUCE

Research Associate, Museum and Art Gallery of the Northern Territory  
GPO Box 4646, Darwin NT 0801, AUSTRALIA  
abruce@broad.net.au

### ABSTRACT

A second specimen of the rare palaemonid shrimp *Leandrites stenopus* Holthuis, 1950, has been collected from Lucinda harbour, northern Queensland. The only previous specimen was collected on the Siboga Expedition in 1899, from Madura, Indonesia. This male specimen enables the generic placement to be confirmed and the geographic distribution to be considerably extended.

KEYWORDS: *Leandrites stenopus*, Crustacea, Palaemoninae, rediscovery, Queensland.

### INTRODUCTION

The unique specimen of the small marine shrimp *Leandrites stenopus* Holthuis was collected in 1899 but was not described until 1950, half a century later. A further half century has elapsed before a second specimen was obtained. Despite innumerable marine faunistic surveys in tropical Indo-West Pacific waters during the last half century, it is still surprising that a species can remain so apparently rare. The present specimen was obtained during the course of a survey of the marine faunas of northern Queensland harbours carried out by the Department of Marine Biology and Aquaculture of James Cook University of North Queensland for Ports Corporation Queensland.

Abbreviations used: CL, post-orbital carapace length; NTM, Northern Territory Museum, Darwin.

### SYSTEMATICS

#### *Leandrites stenopus* Holthuis, 1950

(Figs 1-3)

*Leandrites stenopus* Holthuis, 1950: 40-42, fig. 6. - Chace and Bruce 1993: 7-8.

**Material examined.** 1♂, Lucinda, stn Sh 62, 18° 31' S, 148° 19' E, 7 July-1999, modified Oeckelman sled, 15 m, coll. F. Hoedt, NTM Cr.012794.

**Description.** In poor condition, lacking both second pereiopods and some other appendages.

Rostrum (Fig. 1A) about 0.95 of CL, slightly exceeding antennular peduncle, exceeded by scaphocerite, acute, tapering, horizontal, feebly developed lateral carinae, with 11 acute teeth dorsally, first tooth

epigastric, second also situated on carapace, four small ventral teeth distally, numerous median sparsely plumose interdental setae dorsally, similar submedian marginal setae ventrally; inferior orbital angle (Fig. 3B) well developed, rounded, antennal spine lower, slightly submarginal, branchiostegal suture absent, branchiostegal spine similar to antennal, distinctly postmarginal, pterygostomial angle rounded, sparsely setose.

Ophthalmic somite without bec ocellaire, with small pigment spot.

Eye (Fig. 1D) with large globular cornea, diameter about 0.25 of CL, feebly pigmented, with accessory pigment spot, stalk about 0.8 of corneal width, slightly longer than wide.

Antennule (Fig. 1B) with proximal segment of peduncle twice as long as width, distolateral angle produced, rounded, with small acute distolateral tooth, stylocerite acute, short, not reaching half segment length, ventromedial border with small acute tooth at half length, statocyst well developed, with large circular statolith; intermediate and distal segments very obliquely articulated, subequal in length; upper flagellum biramous, proximal 5 segments of rami fused, short ramus about 0.8 of CL, with 10 stout segments, lower ramus long, filiform; lower flagellum long, filiform.

Antenna (Fig. 1B) with basicerite bearing small acute lateral tooth; carapocerite about 0.3 of scaphocerite length, subcylindrical, moderately compressed, merocerite short, ischiocerite with acute medial process; flagellum long, filiform; scaphocerite about 4 times longer than wide, maximal width at 0.33 of length, lateral margin straight with well developed distolateral tooth, not exceeding distal border of broadly rounded lamella.

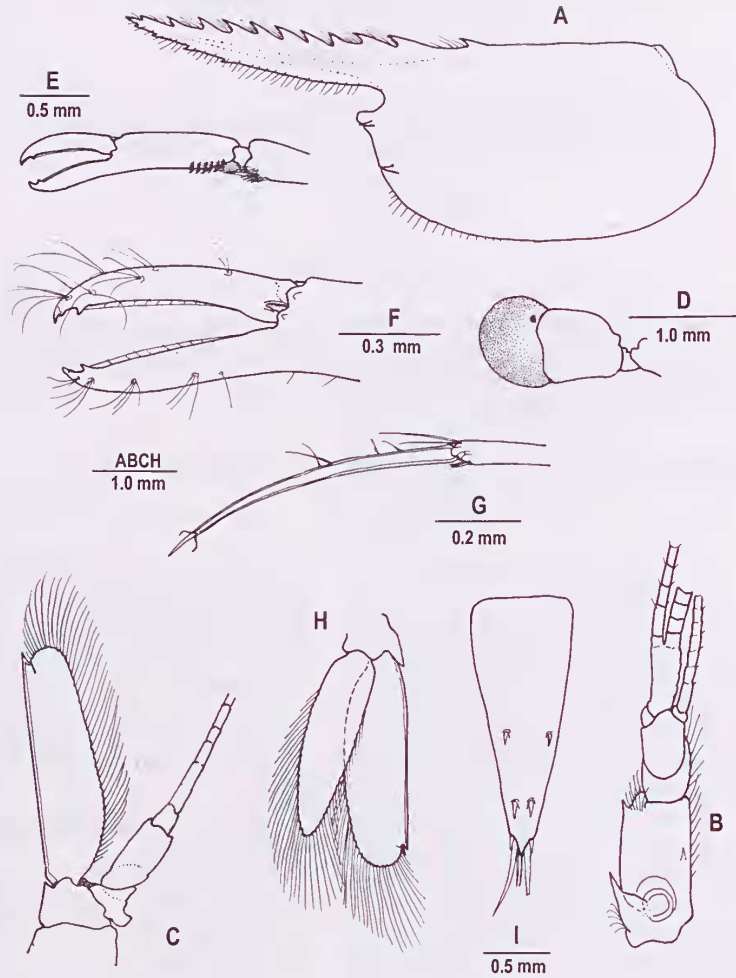


Fig. 1. *Leandrites stenopus* Holthuis. Male, Lucinda, Queensland, NTM Cr.012794. A, carapace and rostrum. B, antennule. C, antenna. D, eye. E, first pereiopod, chela. F, same, fingers. G, third pereiopod, dactyl and distal propod. H, telson. I, uropod.

Abdomen with sixth segment about 0.45 of CL, 1.3 times longer than deep; 2.3 times longer than fifth segment, posterolateral angle well developed, acute, posteroventral angle rounded, with small acute preterminal tooth, fourth pleuron posteroventrally rounded, fifth pleuron small, posteroventrally acute.

Telson (Fig. 1I) about 0.6 times sixth abdominal segment length, 2.5 times longer than anterior width, lateral margins straight, posteriorly convergent, dorsal spines small, at about 0.5 and 0.8 of telson length, anterior pair smaller, about 0.75, and further apart than posterior pair, posterior width about 0.25 of anterior width, acutely pointed (Fig. 3J), lateral spines small,

about size of anterior dorsal spines, marginal, medial spines well developed, stout, about 0.3 of telson length, subventral, submedian setae half length of medial spines, slender, sparsely setulose, subventral.

Mandible (Fig. 2A) robust, without palp, with stout four-toothed molar process, incisor process with three large acute teeth distally. Maxillula (Fig. 2B) with distinctly bilobed palp (Fig. 3C), lower lobe with small distal tubercle bearing short hooked seta; upper lacinia with about 12 stout simple spines distally; lower lacinia with numerous shorter spiniform setae distally. Maxilla (Fig. 2C) with basal endite bilobed, lobes slender, subequal, with sparse slender setae distally, palp tapering

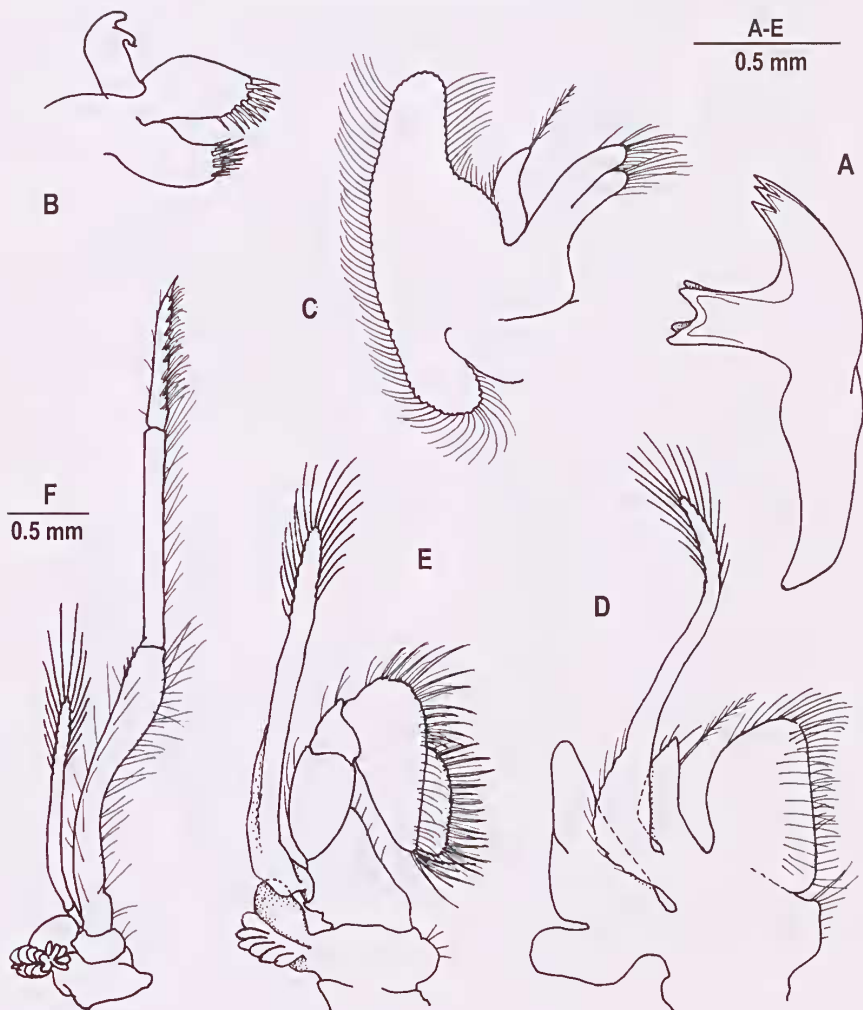


Fig. 2. *Leandrites stenopus* Holthuis. Male, Lucinda, Queensland, NTM Cr.012794. A, mandible. B, maxillula. C, maxilla. D, first maxilliped. E, second maxilliped. F, third maxilliped.

distally with single terminal plumose seta, seaphognathite 2.7 times longer than wide, broad centrally, narrow anteriorly, with small posterior lobe. First maxilliped (Fig. 2D) with basal endite large, broad, distally rounded, distal and medial borders with numerous fine, mainly simple setae, coxal endite distinct, distomedially angular, sparsely setose, palp tapering, distally angular, with long preterminal plumose seta medially, short simple setae distally, exopod well developed, with numerous plumose setae distally, caridean lobe small, narrow, sparsely setose, epipod large, deeply bilobed distal lobe much larger, triangular, proximal lobe smaller rounded. Second

maxilliped (Fig. 2E) with dactylar segment short, broad, about 3.0 times longer than width, 0.6 of propodal segment length, with numerous long serrulate spines along medial margin, propodal segment broadly expanded distomedially, rounded, with numerous long serrulate spines medially, carpus and ischiomerus normal, exopod well developed, with numerous plumose setae distally, ramus expanded proximolaterally, basis medially produced, rounded, with small sub-oval epipod laterally, with small multi-lamellar podobranch. Third maxilliped (Fig. 2F) slender, ischiomerus completely fused with basis, junction indicated by small medial notch, about 15 times longer than central width, distally

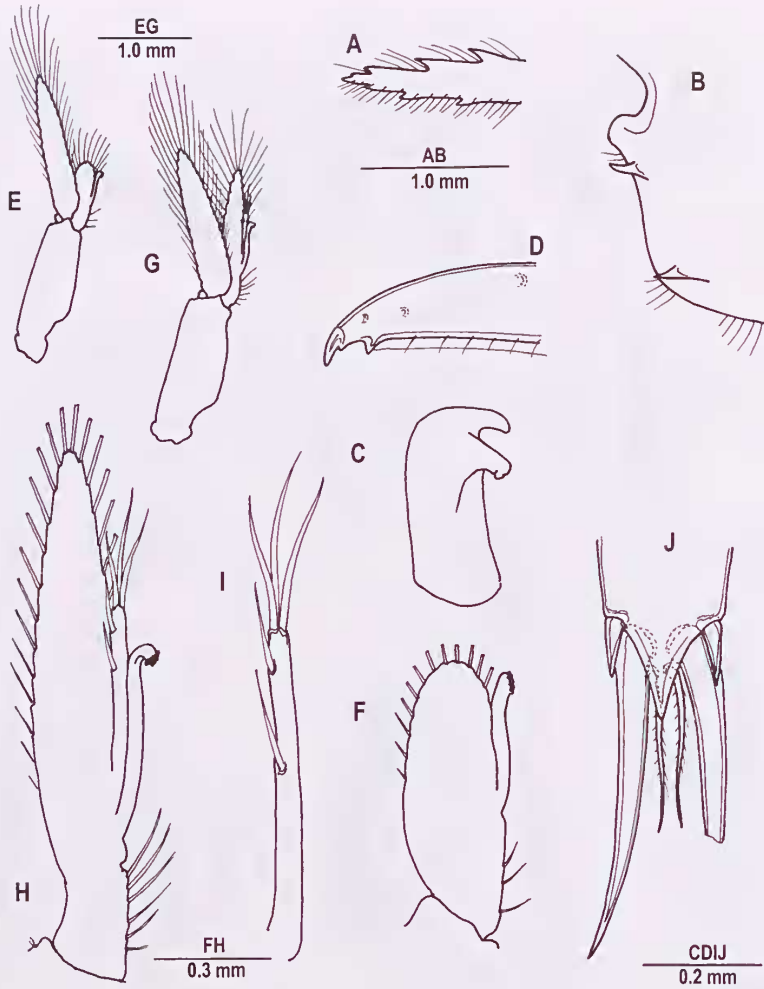


Fig. 3. *Leandrites stenopus* Holthuis. Male, Lucinda, Queensland, NTM. Cr.012794. A, tip of rostrum. B, inferior orbital angle. C, maxillula, palp. D, first pereiopod, distal dactylus. E, first pleopod. F, same, endopod. G, second pleopod. H, same, endopod. I, same, appendix masculina. J, telson, posterior spines.

broadened to about double central width, with three small spinules distolaterally, medial margin sparsely setose, carpal segment subcylindrical, about 12 times longer than wide, sparsely setose medially, distal segment about 0.6 of carpal segment length, with strong distal spine, medially with nine transverse rows of spiniform setae; endopod well developed, reaching to about 0.75 of ischiomer segment length, with numerous plumose setae distally; coxa medially produced, sparsely setose, lateral plate well developed, rounded, with small lamellar arthrobranch proximally.

Pleurobranchs 5.

Fourth thoracic sternite with small acute medial process.

First pereiopod as previously described. Slender, with chela (Fig. 1E) about 0.75 of propod length, 0.68 of meral length; chela with palm slightly compressed, about 3.5 times longer than depth, with six transverse rows of short serrate setae proximally, fingers (Fig. 1F) sparsely setose, about 0.8 of palm length, similar, stout, feebly hollowed medially, about 5.5 times longer than proximal depth, with acute hooked tips, with small acute tooth (Fig. 3D) proximally, rest of cutting edge laminar, entire.

Third pereiopod slender, dactyl (Fig. 1G) about 0.33 of propod length, slightly curved, about 17 times longer than proximal depth, unguis feebly demarcated, about 0.12 of corpus length, with two slender setae at half dorsal margin length, smaller setae proximally, two

sensory setae distolaterally, propod subequal to CL, with two small distoventral spinules, six smaller ventral spinules. Fourth and fifth pereopods generally similar.

First pleopod (Fig. 3E) with endopod (Fig. 3F) about half exopod length, sub-oval, about 2.75 times longer than central width, distal and lateral borders with short plumose setae, proximal medial border with three spiniform setae, with well developed appendix interna arising at 0.5 of medial margin, not exceeding distal border of ramus. Second pleopod (Fig. 3G) with endopod (Fig. 3H) about 0.95 of exopod length, with numerous long plumose marginal setae, appendices arising at about 0.3 of medial margin length, appendix masculina (Fig. 3I) about 0.3 of endopod length, slender, subcylindrical, 12 times longer than proximal width with three slender serrulate terminal spines, about half appendix length, 2 shorter simple distolateral spines.

Uropod (Fig. 1H) with rami distinctly exceeding telson, protopodite posteriorly acute; exopod 3.4 times longer than central width, lateral margin straight with small distal tooth, with mobile spine medially, diaeresis obsolete, distal lamella reduced.

*Measurements.* CL approx. 3.4 mm.

*Colouration.* Unknown.

*Habitat.* Water temperature 25.4°C; salinity 34.9 ppt; sea floor firm, featureless sand/mud, 5.6 km offshore.

**Remarks.** The specimen generally agrees closely with the original description. The type specimen has only three ventral rostral teeth, in contrast with four in the present specimen. The rostral dentition can therefore be  $1 + 10/3-4$ . Not reported in the original description are the small preterminal accessory teeth on each of the fingers of the first pereopods. No similar teeth have been reported in other palaemonid genera.

**Discussion.** The original specimen was collected on March 8, 1899 and no further specimens have been subsequently described during the following century. The discovery of a second specimen, albeit damaged and incomplete, shows that the species is still extant and of wider distribution. The assessment of rarity in marine habitats remains an unsolved problem. A terrestrial species that has not been observed over a period of 50 years is deemed extinct (Baillie and Groombridge 1996). Li and Manning (1998) reported the presence of this species in the northern South China Sea but provided no further details.

The slender build and appendages of this shrimp suggests that it is a free-living soft bottom species. The holotype was collected from 56 m on a radiolarian ooze substrate.

Chace and Bruce (1993) commented that the generic position of this species could not be fully ascertained until a male had been collected, enabling the condition of the first pleopod to be determined. This has now been rectified and the presence of an appendix interna on the

first pleopod endopod confirms that this species belongs in the genus *Leandrites*. The presence of a median sternal tooth on the fourth thoracic sternite is noted; a similar tooth is also present in *Leandrites celebensis* (De Man, 1881), a feature that is probably another character of generic value (Bruce 1987). It is found in some genera in both the Palaemoninae and the Pontoniinae and its phylogenetic importance is yet to be evaluated.

The fingers of the second pereopod chela in *Leandrites stenopus* appear to be unique amongst the Palaemoninae, with the small acute preterminal teeth. It remains possible that these may have been overlooked in other species as, although distinctive, they are very small and not readily discernible when the fingers are closed.

Four species of the genus *Leandrites* are now known, all from the central Indo-West Pacific region, and a key for their identification is provided by Chace and Bruce (1993). The commonest and most widely distributed is *L. celebensis*, recorded from southern India, Indonesia and tropical Australian waters, from shallow brackish waters. The three other species are all south east Asian. *Leandrites indicus* Holthuis, 1950, is known from the type specimen from Sulawesi, Indonesia, and Vietnam (Nguyen Van Xuan 1992), where it is common in mangrove creeks and rivers; *L. deschampsii* (Nobili, 1903), from three specimens from the type locality, Singapore, and one further specimen from China (Liu *et al.* 1990); *L. stenopus* is now definitely known from two specimens only, from off Java, Indonesia, and north east Queensland, Australia, and probably also the northern South China Sea.

The present record also contrasts with the original discovery and indicates that the species may also occur in shallower water (15 m *versus* 56 m) and on non-radiolarian substrates.

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